

Lecture 22

04/07/2022

• Photo-z With Neural Networks

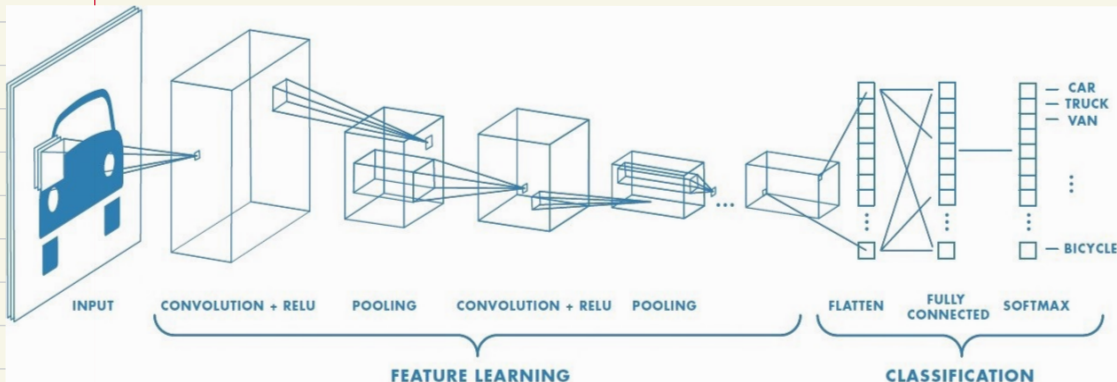
↳ learn galaxy redshifts from their colors.

- * FULLY CONNECTED NETWORK i.e. all neurons connected between layers.
- * 4 HIDDEN LAYER -- RELU activation
- * STOCHASTIC GRADIENT DESCENT
- * PASS DATA IN BATCHES

• Convolutional Neural Networks (CNNs)

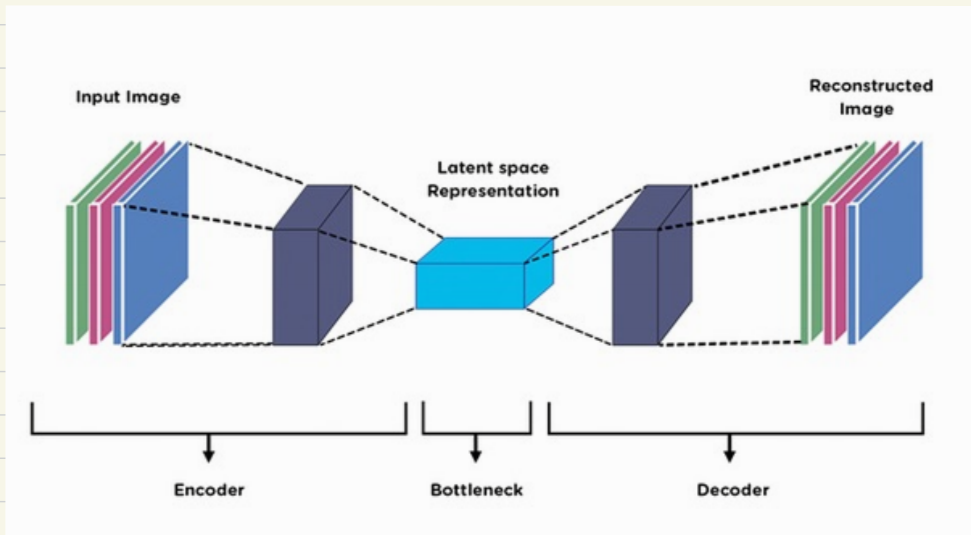
↳ used for image classification

⇒ Your eye does not look at everything at once... only things within FOV.



o Autoencoders

⇒ data compression and dimensionality reduction



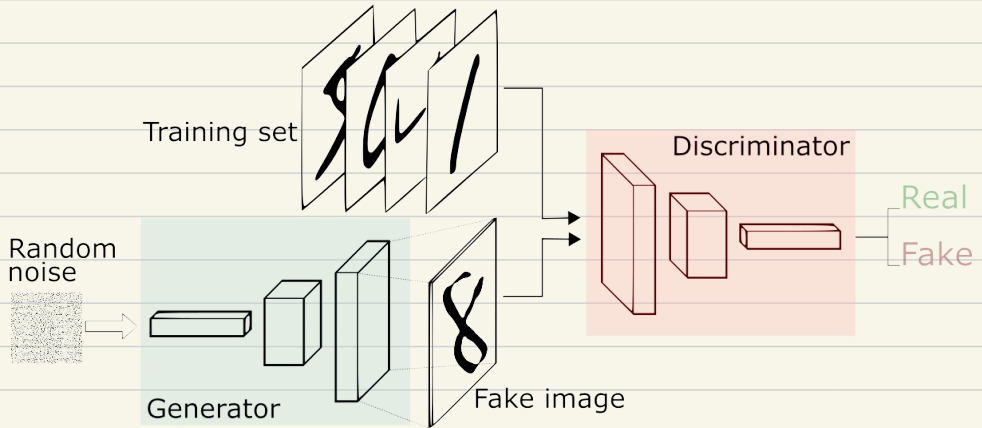
compression coded (compressed) data decompressing

- * Sort of like PCA with a NN.
- * Can filter out noise and interference.

⇒ **Variational Autoencoders** allow for a degree of randomness and probability in the coded representation.

⇒ helps if we have only limited training data.

- Generative Adversarial Networks (GANs)
↳ make NNs compete against each other to fake new data samples.



* "This X Does Not Exist"

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